Numb. 55.

PHILOSOPHICAL TRANSACTIONS.

January 17. 1670.

The Contents,

An Accompt of ſuch of the more notable Celeſtial Appearances of the Year 1670, *as will be conſpicuous in the* Engliſh *Horizon*; *and among them*, *an* Eclipſe of the Sun, *in part viſible here in* England, *though pretermitted*, *as ſuch*, *by others*; *as alſo of divers* Stellar Eclipſes, *to be cauſed by the Moon*, *covering ſeveral Fix'd Stars. Some Obſervations concerning the Barometer and Thermometer*, *made by Dr.* Beale *in* Somerſet; *and others of the like nature*, *made by Dr.* John Wallis *in* Oxford. *An Accompt of a ſmall Tract*, *entituled*, THOMÆ HOBBES Quadratura Circuli, Cubatio Sphæræ, Duplicatio Cubi, (*Secundo Edita*,) Denuò Refutata, A. JOH. WALLIS, *S. T. D.* &c.

An Accompt *Of ſuch of the more notable Celeſtial* Phænomena *of the Year* 1670, *as will be conſpicuous in the Engliſh Horizon*; *written by the Learned and Induſtrious Mr.* John Flamſtead *Novemb.* 4 1669. *and by him addreſſed and recommended for encouragement*, *to the Right Honorable*, *the Lord Viſcount* Brouncker, *as Preſident of the* Royal Society.

My Lord,

AMong thoſe many Illuſtrious, Noble, and Generous Perſons, who have the honour to be in the Liſt of the *R. Society*, I find numbered ſome Aſtronomers, whom our Age accounts its Glory, and our Arts their Support: which induces me to believe that among all thoſe Ingenuous Arts and Sciences, which have put themſelves under their Patronage, and look for an improvement from their Induſtry, the *Celeſtial* are not to be accounted the laſt. Their Excellent Hiſtory ſhews, that they have not neglected the *Heavens*. And their endeavours for the Improvement of *Optick Glaſſes*, and Encouragement of ſuch as labour therein, do more than obſcurely indicate thoſe high reſpects they have for the Sublimeſt of Human Sciences, *Aſtronomy*.

These conſiderations invited me to addreſs myſelf, with theſe my following labours, to your Honor, who hold ſo high a place in that illuſtrious Body, and are known to excel in the knowledge as well, as the Love of that Science, I ſtand ingaged in. You know, *My lord*, How much it conduceth to the Advancement of *Aſtronomy*, and the Correction of our *Canons*, to have the Celeſtial Appearances accurately obſerved, and how much it concerns the Obſerver to have notice of what *Phænomena* the Heavens exhibit convenient for his Obſervation. I have endeavoured in the following pages to accommodate him with the Calculations of ſuch of the more notable *Phænomena* of the Year 1670,, as will be conſpicuous in the Engliſh Horizon, if the Heavens be clear; and ſhall, God willing, performe the like for future Years, if I may be but encouraged by the acceptance of theſe

I was excited to this task by peruſing the *Mercurius in Sole viſus* of the Excellent *Hevelius*, who hath obliegged Aſtronomy by his accurate Obſervations of the *Moons tranſits* by and over *Saturne*, and her occultations of *Spica Virginis*, and the *Clara in fronte Scorpii*. I ſaw nothing to hinder Us from performing as much, ſince we cannot want inſtruments, at leaſt, as good as His, if we had but the like induſtry, and notice alſo of the time, when the Appearances would preſent themſelves. Though I was not furniſh't with very fit Inſtruments, yet hoping, that I might do ſomewhat worth my labour, I revolv'd Mr. *Wings Ephemerides* for this year, to find, what Stars the *Moon* might cover, and how often, in her Revolution. Thoſe Occultations, which I collected might be conſpicuous, I re-calculated from the exacteſt Tables, I know in being

being, the *Caroline*, of Mr. *Street*, and theſe I ſhall here preſent you with at large. Theſe Supputations, when I firſt framed them, I fitted to the Meridian of my habitation, intending them only for my own private uſe; but upon ſecond conſideration, finding, how much the Obſervations, if rightly and accurately performed, might conduce to the better ſtating the Dimenſions of the Moons Orbite, and ſolving the Irregularities of ſeveral *Phænomena*, I reſolv'd to communicate them to the Ingenious, and to deſire their utmoſt care in obſerving theſe Appearances, which I had not un-accurately calculated. And I now humbly proſtrate them to their peruſal, deſiring, that, if they ſeem worthy, you will be pleaſed to impart them in ſuch a way, as you ſhall think fit, to ſuch intelligent and induſtrious perſons either of the R. *Society*, or others, as will be accurate in their Obſervations, and willing to communicate what they ſhall have obſerved,

I hope, *My Lord*, you will not account me faulty for having adapted the Calculations to the *Meridian* of a place no more famous than *Derby*. You had the occaſion before; to which I may add, that the *Meridian* paſſing over *Derby* is nearer the middle of *England*, than that of *London*; and that its *Latitude* bi-ſects it nearer, than any yet ſtated: So that this Town, which is ſeated in *Umbilico quaſi Regni*, muſt needs be the moſt convenient place, that can be choſen, where-on to fix our Calculations. For, the diſtance of any place within this kingdom from it, will not much vary the manner of their Appearance in any of the *Phænomena*, except the Eclipſe of the Sun: for, in the Occultations, the Stars will appeare to paſs nearly under the ſame Angles and Spots of the

Moon; nor will the times of the *Phaſes*, or the *Moræ ſub Luna* differ much in any place of the Kingdom; nor at all, if a due conſideration be had of the *Differences* of *Meridians*, and the *Laws* of *Parallaxes.*

I come now to the *Phænomena* themſelves. Mr. *Wing*'s *Ephemerides* and others tell us, that we ſhall have but one Eclipſe, and that of the Moon, conſpicuous this Year. But, *pace hujus Aſtronomi*, I dare affirm, that a part of an Eclipſe of the Sun will, if the weather permit, be viſible to us alſo: Which I have therefore calculated from the *Caroline Tables* to the *Meridian of Derby*, whoſe *Longitude* from *London*, I have us'd in this Eclipſe, is 6 min. to the Weſt, and *Latitude* 52 deg. 57 min.

By which Tables on Saturday *April 9th.* at the time of Sun-ſet, ſuppoſed at 7 *ho.* 3 *minutes P. M.* I find,

		ſ.	d.	m.	ſec.
The Suns Mean Anomaly		9	21	13	52
The Moons Mean Anomaly		7	9	31	43
The Place of her Apogeum		5	7	40	31
The Place of her Node		0	21	38	20
The Suns true place,		♈	29	55	25
The Moons true place,		♉	0	23	46
With North-Latitude			0	45	47
The Point culminating,		♌	11	6	29
The Horoſcope,		♏	0	1	20
The Altitude of the Moons Center			0	44	10
The Parallactical Angle			33	55	35
The Parallax of the Moon from the Sun in	Altitude		0	59	39
	Longitude		0	49	30
	Latitude		0	33	18
Therefore the Moons viſible place,		♈	29	34	16
In Antecedence of the Sun			0	21	9
With Viſible North-Latitude			0	12	29
The diſtance of the Sun and Moons Centers			0	24	34
The Suns Semi-diameter			0	15	49
The Moons Semi-diameter			0	16	7
Summe			0	31	56
Parts defective			0	7	22
			dig.		
Therefore the digits darkn'd			2	47	40
The Inclination of this *Phaſis* above the Ecliptick, is			0	30	33
			deg.		
And from the Suns Zenith			115	31	33

By this *Calculus* it appears, that the Sun is ſo far from not being eclipſed, that he is obſcured near 3 digits in the ſetting.

Now to find, when the Eclipſe begins, I re-calculate the places of the Sun and Moon to 6 *h.* 46 *m.* *P. M.* and inveſtigate

			d.	m.	ſec.
The Suns place,		♈	29	54	44
The Moons place,		♉	0	13	19
With North-Latitude			0	44	50
The Mid-heaven,		♌	6	54	28
The Point deſcending,		♈	27	6	10
The Altitude of the Moons Center			3	1	14
The Parallactical Angle			33	7	40
The *Parallax* of the Moon from the Sun in	Altitude		0	59	33
	Longitude		0	49	56
	Latitude		0	32	54
The Moons Viſible place,		♈	29	23	23
With Viſible North-Latitude			0	12	16
Leſs then at 7 *h.* 3 *m.* by			0	0	13
Ergo, The Angle of the Moons viſible way with the Ecliptick			1	8	26
The Angle of Incidence in the beginning			23	48	18
Motion ſeen from 6 *h.* 46 *m.* to the inchoation			0	1	53

Therefore the time of the beginning, *6 h.* 49 *min. P. M.* The firſt contact will appear 122 *d.* 55 *m.* from the Suns Zenith. And *I* am perſwaded, that this *Calculus* doth exhibite this *Phænomenon* nearly, as it will appear unto us: And *I* queſtion not, but that in and near our *Meridian* it will be obſervable, if the Air hinder not. *It* is an Appearance that will richly merit the accurateſt of our Obſervations. For the Moons mean Anomaly being about 7 *Sign.* 11 *deg.* we may the better judge by the Obſervation, Whether the *Æquations* of her *Orbite* be Oſcillatory, or not. Nor need we ſcruple about the *Æquation* of *Natural days: I* have fully demonſtrated the Æquations, ſo that *I* am perſwaded, no one hereafter will controvert them; and *I* ſhall ere long, if God will, commit them to your and the publick cenſure.

I ſuppoſe the beginning of this Eclipſe may, if the Air be ſerene, appear at *London*; but its *Meridian* being removed to the Eaſt from ours, 5 or *6 minutes*, and its Latitude being leſs, ſo that the Altitude of the *90 deg.* and conſequently the Parallax of Longitude will be greater, and of Latitude, leſs: *It* follows, that the Eclipſe will be retarded, and that only the beginning thereof, ſcarce to *one digits* Obſervation, will there appear; but in the *North* and the *Weſtern* parts of *England* and *Scotland*, it will appear more fully: and in *Ireland* it will be viſible to the middle of the Eclipſe.

For the well-obſerving of this noble Appearance, *I* need not ſuggeſt the way of caſting the *Species* of the Sun through a good Teleſcope of a competent length, on an extended paper, placed behind the Eye-glaſs ſo far, as that the ſaid *Species* may appear at leaſt *6* inches over; then dividing *both* his *Periphery* into 360 degrees, for the better obſerving the *Inclination* of the *Cuſps* of each *Phaſis*; *and* his *Diameter* into digits, and their parts by Concentrick Circles, for meaſuring the quantities of the obſcured parts. For the meaſuring of time, the skilful Obſerver will be furniſht with good *Quadrants*, *Clocks*, or *Pendulums*.

But to proceed to the Occultations, that may be made by the Moon, of the leſſer Lights; I ſhall take notice, That thoſe Stars, that have not above 6 *d.* 20 *m.* Latitude from the *Ecliptick*, may all of them, ſome time or other, be cover'd by the Moon, in her paſſing through the *Zodiack*: Of which ſort I have numbred, from the *Tychonick Catalogues*, the Stars ſo lying as you ſee in the annex'd Table: And I find in the *Zodiack* 189, with 6 in the *Pleiades*, 12 in the Northern, and 5 in Southern Conſtellations, plac'd out of the Ecliptick; the total is 212. Of theſe the Moon frequently hides one or other, yet no notice taken of it by the *Ephemerides* of our Aſtrologers.

Aries	12	
Taur.	21	
Gem.	21	
Canc.	12	
Leo	22	
Virg.	18	
Libr.	12	
Scorp.	8	
Sagitt.	14	
Capr.	20	
Aquar.	16	
Piſc.	13	
For. Aurigæ	5	*Bor.*
Ophiuch.	7	
Cete	3	*Auſt.*
Orion.	2	
Pleiad.	6	*Bor.*
Sum	212	

It would be too large a labour for one man to undertake the calculating of all the Occultations obſervable in this year, nor is it perhaps ſo needful: for, the Stars of the 5th and 6th Magnitude are more numerous, nor ſo accurately (I doubt) rectified, and the Moon approaching them within 4 or 5 degrees, abſconds them to the naked eye; and if the Obſervation be undertaken with a Teleſcope, other ſmaller Stars may be miſtaken for thoſe, the *Calculus* intends, and ſo both the Obſerver deluded, and the Art prejudiced.

But the Moon will ſeveral times this year cover two noted Fix'd Stars; of which, that I may gratifie the Curious, and excite the Induſtrious to the like endeavors, I ſhall give here the *Calculus* of the Occultations and Tranſits, from the *Caroline* Tables.

I. The

I. The firſt Occultation almoſt uſhers in the Year*: For on *January* 2. in the morning, the Star called *Præcedens illarum quatuor in ala Virginis Auſtrina*; may be covered with the Moons Southern limb. But fearing, that this Appearance will ſcarce be conſpicuous, becauſe the approaching light of the Sun will ſeize the Star before the beginning of the Occultation, I forbear to calculate it.

* *This Diſcourſe came too late to hand, for giving timely notice of this* Phænomenon; *though nothing be loſt by this loſs of time, as appears by the Advertiſement it ſelf.*

II. The next obſervable Occultation will be on *February* 25. a little before 8 at night; the Moon then again covering the ſame Star in the *Virgins* South-wing: For which take this *Calculus* from the *Caroline* Tables; wherein I have ſupputed the Moons viſible place to 7 *h.* 28 *m.* and 8 *h.* 18 *m. P. M.* at *Derby*, ſuppoſing its Longitude to the Weſt from *London* 5 *m.* 30 *ſec.* and its Latitude, as *I* obſerv'd it, 52 *d.* 58 *m.*

	To 7 *h.* 28 *m.*				*To* 8 *h.* 18 *m.*			
	ſ.	*d.*	*m.*	*ſec.*	*ſ.*	*d.*	*m.*	*ſec.*
The Moons Mean Anomaly	0	18	4	3	0	18	31	16
The Moons true place	♍	29	15	4	♍	29	39	45
The Argument of Latitude	5	5	55	34	5	6	21	43
The Moons true Latitude North		2	2	33		2	0	29
Semidiameter							14	22
Her Horizontal Parallax	♓	17	35	47	♓	17	51	
The Suns right Aſcenſion		348	36			348	38	
The right Aſcenſion of the Mid-heaven		100	36			113	8	
The Mid-heaven	♋	9	44		♋	21	23	
The Horoſcope	♎	7	18		♎	15	39	
The Angle Orient		60	17			59	13	
The Moon from the Aſcendent in the Ecliptick		8	3			16	19	
In a great Circle		8	18			16	26	
The Altitude of the Moons Center		8	0			15	1	
Her Azimuth from the Aſcendent		2	16			6	45	
Her Parallactical Angle		29	47			31	26	
The Moons Parallax in Altitude			52	46			51	33
Longitude			45	48			43	59
Latitude			26	13			26	54
The Stars place *Libra* 0 *d.* 1 *m.* 19 *ſec.* with Latit. Boreal.						1	25	0
The Moons viſible place	♎	0	0	52	♎	0	23	44
With viſible Latitude North		1	36	20		1	33	35
In Antecedence of the Star			9	27	*in conſeq.*		13	25
With greater Latitude North			11	20			8	35

Her

	d.	*m.*	*ſec.*
Her viſible Motion from 7 *h.* 28 *m.* to 8 *h.* 18 *m.* is	0	22	52
The difference of the Moons viſible Latitudes	0	2	45
The Angle of the Moons viſible way with the Eclip.	6	51	27
Her viſible Latitude at the apparent Conjunction	1	35	12
The Angle of Immerſion beneath a ſtraight line drawn through her Center parallel to the Ecliptic —	51	33	5
Motion from the *I*mmerſion to the viſib. Conjunct.	0	9	1
The Angle of Emerſion beneath the parallel	37	42	5
The viſib. Motion from the 0 *m.* to the Egreſs appar.	0	11	30
Apparent Mot. from 7 *h.* 28 to the Immerſion	0	0	36
Apparent Mot. from 8 18 to the Stars Egreſs	0	1	55
The time from 7 28 to the Sub-ingreſs	0	2	9
The time from 8 18 to the Stars Emerſ.	0	4	22

Therefore the Sub-ingreſs	7	29	6.
Emerſion	8	13	38.
The Stars *Mora* under the Moon	0	44	32.

The Stars Latitude from a line drawn over the Moons Center parallel to the Ecliptick	in the	*I*mmerſion	11	17
		Egreſs	8	50

Over what Spots of the Moon, the ſeeming way of the Star would paſs, *I* do not here ſhew, becauſe I dare not rely on our Selenographical Tables. *I* proceed therefore to the next.

III. March 3. in the morning, the Moon paſſeth over *Antares*, or the *Scorpions heart*, whoſe Longitude to the *Caroline Author* is then *Scorpio* 5 *deg.* 7 *m.* 20 *ſec.* and Latitude South 4. 27. The Ecliptical Conjunction by the *Ephemerides* was *March* 2. 16 *h.* 54 *m. P. M.* Wherefore, for the better inveſtigating the times of the beginning and end of this Occultation, *I* have calculated the true and viſible places of the Moon to 16 *h.* 39 *m.* 52 *ſec.* and to 17 *h.* 49 *m.* 52 *ſec. P. M.* by the ſaid Tables to the Meridian and Latitude of *Derby*, as follows;

	To 16 *h.* 39 *m.* 52 *ſec.*				To 17 *h.* 39 *m.* 52 *ſec.*			
	ſ.	*d.*	*m.*	*ſec.*	*ſ.*	*d.*	*m.*	*ſec.*
The Moons mean Anomaly	2	28	22	56	2	29	1	3
Her true place	♐	4	41	0	♐	5	18	18
The Argument of Latitude	7	12	4	41	7	12	40	10
The Moons true Latit. South		3	32	0		3	34	30
The Horizontal Semi-diameter			15	21			15	21
Parallax			56	45			56	45
The Suns true place	♓	22	57	21	♓	23	0	15
The Suns right Aſcenſion		353	32			353	35	
The right Aſcenſion of the Mid-heaven		243	30			261	3	
The Mid-heaven	♐	5	26		♐	21	47	
The Horoſcope	♒	3	10		♒	7	31	
The Angle Orient		18	42			14	15	
The ☽ from the Aſcend. in the Eclipt.		58	29			87	47	
In a great Circle		58	33			87	$47\frac{1}{2}$	
The true Altit. of the Moons Center		19	21			17	45	
Her Azimuth from the Horoſcope		56	26			87	40	
Her Parallactical Angle		79	47			89	26	
Her Parallax in Altitude			53	50			54	18
Her Parallax in Longitude			9	33			9	32
Her Parallax in Latitude			52	59			54	18
Therefore her apparent place	♐	4	50	33	♐	5	17	46
In Antecedence of the Star			16	47	in conſ.		10	26
With Latitude South, then the Star leſs			2	1	more		1	48
So her viſible motion to 1 *h.* 10 *m.* is						0	27	13
The difference of her Latitudes						0	3	49
The Angle of her viſible way with the Ecliptick						7	59	0
The Angle of Incidence under a parallel line to the Ecliptick						6	45	32
Angle of emerſion above the line drawn by the Moons Center						9	12	28

	h.	*m.*	*ſec.*			
The apparent motion from	16	39	52.	to the ſub-ingreſs	1	27
The apparent motion from	17	39	52.	to the emerſion	4	49
The time from	16	39	52.	to the ſub-ingreſs	3	46
	17	39	52.	to the egreſs of the Star	13	32

		h.	*m.*	*ſec.*	
Therefore at *Derby* the	ſub-ingreſs	16	43	18	*P. M.*
	emerſion	18	0	24	
The Stars *Mora* under the Moon		1	18	46.	

			m.	*ſec.*	
The Stars Latitude from a line drawn through the Moons Center parallel to the Ecliptick	in the	Ingreſs	1	54	South
		Egreſs	3	7	North

At

At the middle of this Stellar Eclipſe the Moons Center is but 20 *ſec.* more to the South than the Star; ſo that, if the Libration of the Moon be known, the protraction of the Star's way in this Appearance will be facile. And this *Phænomenon* is highly worth our ſtricteſt Obſervations; for, the Moon being almoſt in her *Mean* diſtance (where there is no great difference among Aſtronomers about her primary æquations) we may the more ſecurely judge of her *ſecond* inæqualities, and perhaps diſcover a *third*, which may promote the Moon, and accelerate the times in this Appearance. If diligent heed be given to the times of the ſub-ingreſs and emerſion of the Star, and with what Spots on the Moons face it keeps in a right line, we may be well aſſiſted, by the obſerued *Mora* to judge of her *Diameter*; for *I* queſtion not, but her Apparent Horary Motion, may, with ſome little trouble, be exactly enough inveſtigated either from the *Wingian* or the *Caroline* Tables.

IV. March 24. *h.* 15. 35 *m. P. M.* by the *Ephemerides*, the Moon will be in the ſame *Longit.* with the fore-mention'd Star *in ala Virg*; with almoſt 2 degrees *North-Latitude*: whence at firſt *I* expected an Occultation; but upon a better *Examen I* find the *Caroline* Tables only preſent a *Tranſit*, as I ſhall prove by this *Calculus*, framed to the *Meridian* and *Latitude* of *Derby*: by which at 15 *h.* 42 *m.* 24 *ſec. P. M.*

	ſ.	*d.*	*m.*	*ſec.*
The Moons *Mean* Anomaly is	0	15	10	37
Her true place	♎	0	5	33
The Argument of Latitude	5	6	38	46
The Moons true Latitude North		1	59	16
Her Horizontal Parallax			52	49
Her Horizontal Semi-diameter			14	17
The Suns Right Aſcenſion		13	28	
The Right Aſcenſion of the Mid-heaven		249	4	
The Mid-heaven	♐	10	41	
The Horoſcope	♒	12	31	
The Angle Occident		16	58	

	ſ.	d.	m.	ſec.
The Moon from the Horoſcope in the Ecliptick		47	34	
In a great Circle		47	36	
Her Azimuth from the Horoſcope		45	53	
The Altitude of her Center		14	23	
Her Parallactical Angle		78	17	
Her Parallax in Altitude			51	21
Her Parallax in Longitude			10	25
Her Parallax in Latitude			50	17
Hence her viſible place	♍	29	54	48
With viſible North-Latitude		1	8	59
Therefore ſhe is in Antecedence of the Star			15	25
With leſs North-Latitude			16	1

Now the Moons Semi-diameter being only 14 *m.* 17 *ſec.* it appears, that the Star is more to the North, than the Moons Limb, by 1 *m.* 44 *ſec.* and the Moons Latitude decreaſing together with the Altitude of the 93d degree, cauſeth the *Apparent* Motion to be viſible in a line bending down from the Star; ſo that near the viſible Conjunction the Star may ſtand about 3 *min.* to the North from the Moons Limb. Though this be not like to prove an Occultation, yet let me deſire thoſe, who have fit Glaſſes and Inſtruments, to obſerve this *Tranſit*, and how far the Star may ſtand from the Limb of the Moon at the time of the viſible Conjunction, that we may be the better enabled to define, *both* how the Motion of the Moon's Latitudes, which ſhall need its limations, is to be reform'd, *and* whether that *Æquation* of the *Nodes*, allow'd by the *Caroline* Author and ſome other Moderns, be firm and valid.

V. The laſt Occultation happens on *May* 23; when 12 *h.* 17 *m.* *P. M.* by the *Ephemerides* the Moon will be in Conjunction with *Antares*. To define the Beginning and End of it, I have ſupputed the Moon's true and viſible places to 12 *h.* 28 *min.* 42 *ſec.* and 13 *h.* 43 *m.* 40 *ſec. P. M.* at *Derby*, by the *Caroline Tables*, and I find,

The

	To 12 h.28 m.42 ſec.				*To 13 h.43′.40*			
	ſ.	*d.*	*m.*	*ſec.*	*ſ.*	*d.*	*m.*	*ſec.*
The Moons mean Anomaly	2	17	23	52	2	18	4	41
Her true place	♐	4	52	48	♐	5	33	41
The Argument of Latitude	7	15	12	26	7	15	56	11
The Moons true Latitude South		3	33	0		3	35	37
The Suns true place	♊	12	30	43	♊	12	33	42
The Suns right Aſcenſion		71	2½			71	5	
Right Aſcenſion of the Mid-heaven		258	13			277	0½	
The Mid-heaven	♐	19	10		♑	6	25	
The Horoſcope	♓	1	0	*aſc.*	♎	17	48	*deſc.*
The Angle Orient		14	41			13	56	
The Moon is diſt. from the Horoſcope		86	7			47	52	
The true Altitude of the Moon's Center		18	11			13	49	
The Azimuth from the Horoſcope aſc.		85	55			46	18½	*deſc*
Her Parallactical Angle		88	58			80	25	
The Moons Parallax in Altitude			52				54	1
The Moons Parallax in Longitude			0	57			8	59
The Moons Parallax in Latitude			52	52			53	16
So the Moons viſible place is	♐	4	53	45	♐	5	24	42
With viſible South-Latitude		4	25	52		4	28	53
In Antecedence of the Star			13	46	in conſ.		17	11
With South-Latitude than the Star leſs			1	8	greater		1	53
So the Moons viſible motion to 1 *h.* 14 *m.* 58 *ſec.* is							30	57
The difference of her apparent Latitudes							3	1
The Angle of her way with the Ecliptick						5	34	0
The Angle of Incidence, under a Parallel to the Ecliptick, through the Moons Center						4	46	32
The Angle of Emerſion above the ſaid Parallel						6	19	28

	h.	*m.*	*ſec.*			
Motion ſeen from the Sub-ingreſs to	12	28	42	is	1	12
Motion ſeen from the Emerſion to	13	43	40	is	2	16
Time from the Sub-ingreſs to	12	28	41	is	2	54 t
Time from the Emerſion to	13	43	40	is	5	28 t
Therefore the Stars Sub-ingreſs at	12	25	48			
Therefore the Stars Emerſion at	13	38	12			
The Star's *Mora* under the Moon	1	12	24			

		m.	*ſec.*	
The Latit. of the Star from a line drawn parallel to the Ecliptick over her Center in the	Sub-ingreſs	1	15	South.
	Emerſion	1	40	North.

In

In this Occultation, as in the preceding, the Center of the Moon paſſes very near the Star, ſo that we may well hereby define, as was advertiſed in the laſt Occultation, both of her *Diameter*, and of the places and *æquations* of her *Nodes*. For in *this*, at 12 *h.* 28 *m.* 42 *ſec. P. M.* the mean Node was in *Aries* 19 *d.* 19 *m.* 34 *ſec.* and the æquation of the Node to be added, 26 *m.* 52 *ſec.* which makes the true Node *Aries* 19 *d.* 46 *m.* 26 *ſec.* But in that of *March* 2 at 16 *h.* 39 *m.* 52 *ſec.* the mean Node was in *Aries* 23 *d.* 39 *m.* 33 *ſec.* the æquation was 55 *m.* 59 *ſec.* to be ſubſtracted; ſo the true Node was in *Aries* 22 *d.* 43 *m.* 34 *ſec.* Now if this Æquation of the Nodes ſhould be neglected, it might make about 5 *min.* difference of the Latitudes, which I have here collected. The Ingenuous therefore will obſerve with all poſſible accuracy, both under what ſpots of the Moon the Stars ſhall enter and emerge in theſe and all other Occultations; and they will note the Times exactly, conſidering the benefit, that will thence accrue to Aſtronomy. The Obſervers muſt not content themſelves with the times acquired by Clocks or rectified Watches, but alſo take the Altitudes of ſome fixt Star, free from Refraction, and remov'd from the Meridian both at the beginning and end of the Occultations, with exact Inſtruments of Braſs well divided.

So far this diligent Author for this time. The other particulars, contained in his Papers, may perhaps be publiſht hereafter. We were to reſerve a part of this Tract for ſome other Communications.